



IMAAC

Interagency Modeling and Atmospheric Assessment Center

Real World

Petrochemical Plant Ongoing Fire in Deer Park, TX

19MAR2019 1430Z

RFI – 18 – 0245U

19MAR2019

Requestor: NWS – Houston WFO

Distribution authorized to U.S. Government agencies and
their contractors for administrative/operational use.

Date: 03/19/2019

Other requests for this document shall be referred to:

Defense Threat Reduction Agency

8725 John J. Kingman Rd, MS 6201

Fort Belvoir, VA 22060-6201

UNCLASSIFIED//FOR OFFICIAL USE ONLY (FOUO)



9963243



Request Summary

• Request Data

- Requestor: Kent Prochazka, Meteorologist, National Weather Service Houston, WFO
- Contact: 1-800-846-1828, sr.hgx.ops@noaa.gov, kent.prochazka@noaa.gov
- Request: Downwind hazard for a plant fire in Deer Park, TX

Deer Park, TX
Latitude: 29.732437° N
Longitude: 95.091517° W

Time: 0500 CDT
Date: 19MAR2019

Hazard:

- 8 oil tanks, burning at a rate of 984 kg/s (approximately equivalent to a 35 meter burning pool x 8 tanks)

Weather:

- High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)

• Solution

- Summary: Soot concentration and vertical slice contours are provided.
- Employment: Real World
- Reachback: M. Che, S. Runyon, T. Mott

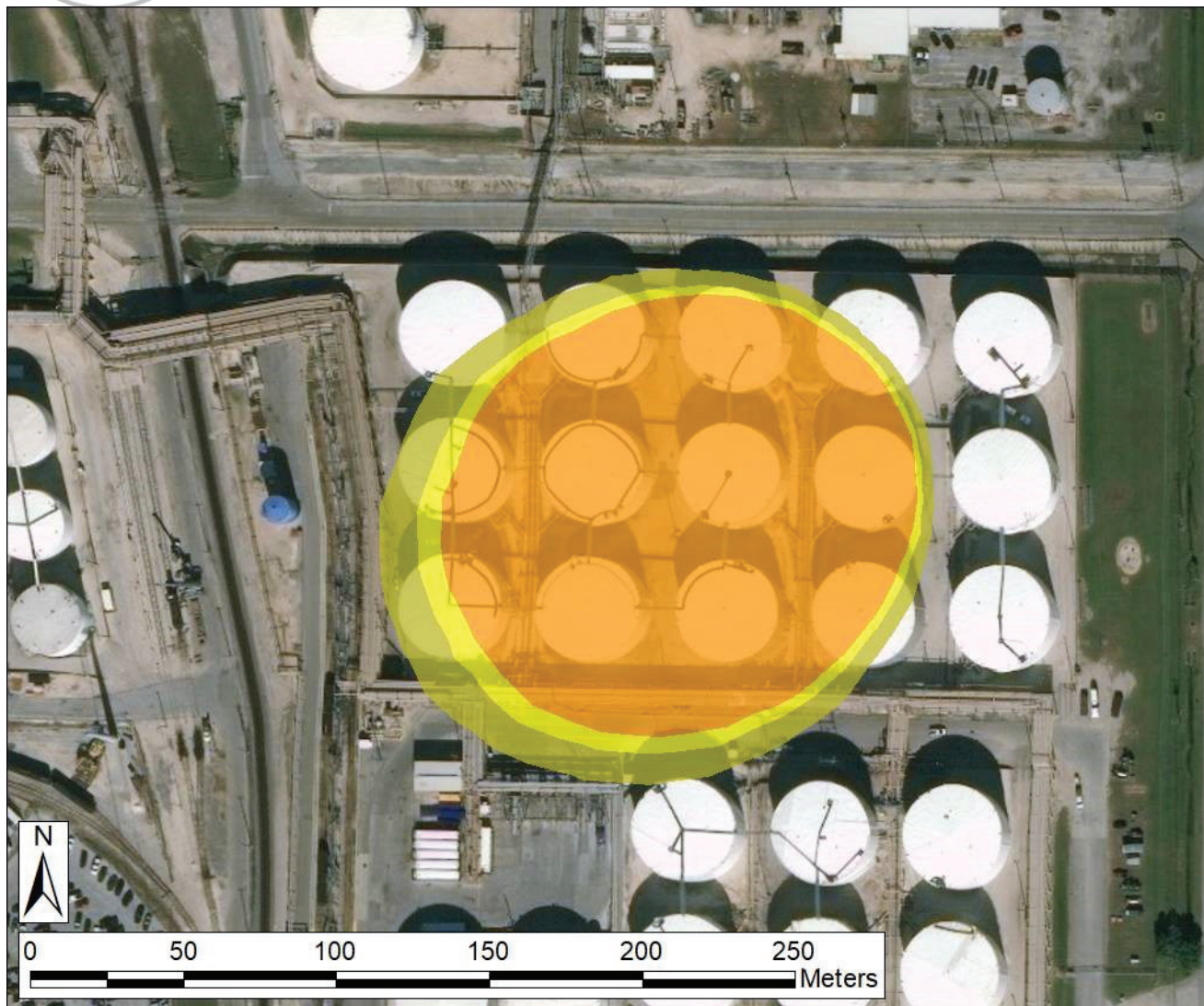


Modeling Summary

- Known Information: Eight tanks, assumed each tank has 1 million kilograms of crude oil burning.
- Modeling Assumptions: Assumed a continuous burn of oil-based liquid hydrocarbon with a pool radius of 35 meters per tank.
- Caveats: This analysis does not reflect firefighting or changes in releases over time.
- Results seem generally consistent with NOAA HYSPLIT results (see, e.g., <http://www.hysplit-pub.noaa.gov/hysplitpublic-bin/hyresults.pl?jobidno=2736>)



Soot Conc. @ Ground Level; 1000 CDT – Initial Response



Soot - Concentration
19-Mar-19 15:00:00Z (2.000 hr)

Mean Area		In contour population
	ug/m3	
Hazardous	250.0	2
Very Unhealthy	150.0	3
Unhealthy	65.0	3

This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

FACTS

Deer Park, TX

Location: 29.732437° N / 95.091517° W

Event Time: 0500 CDT, 19MAR2019

Type: Oil fire

Amount: 984 kg/s

Weather: 12 km NAM

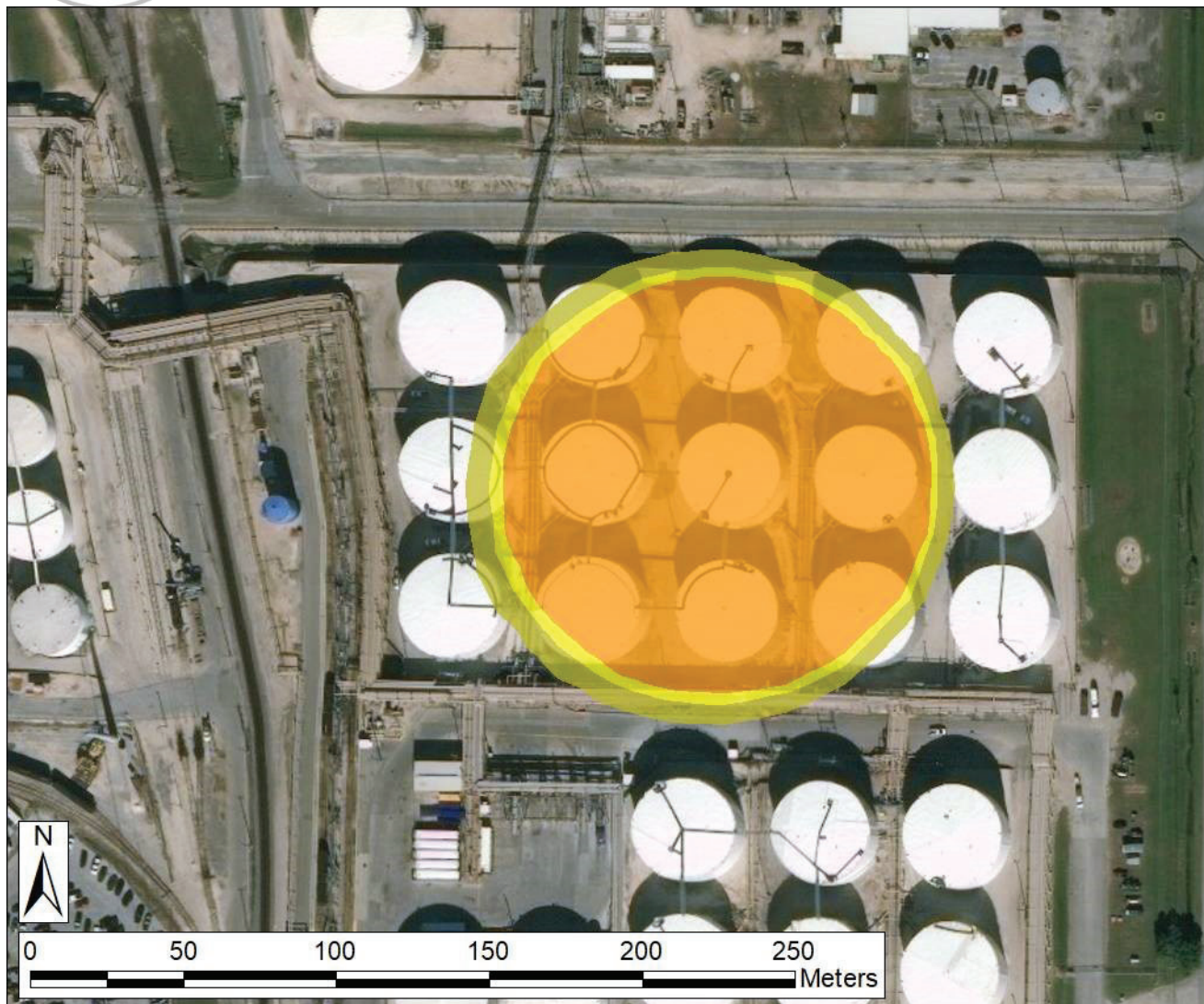
Model: HPAC 6.5

Static Population Estimates:

LandScan 2017



Soot Conc. @ Ground Level; 1200 CDT – Initial Response



Soot - Concentration
19-Mar-19 17:00:00Z (4.000 hr)

Mean Area		In contour population
	ug/m3	
Hazardous	250.0	2
Very Unhealthy	150.0	2
Unhealthy	65.0	3

This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

FACTS

Deer Park, TX

Location: 29.732437° N / 95.091517° W

Event Time: 0500 CDT, 19MAR2019

Type: Oil fire

Amount: 984 kg/s

Weather: 12 km NAM

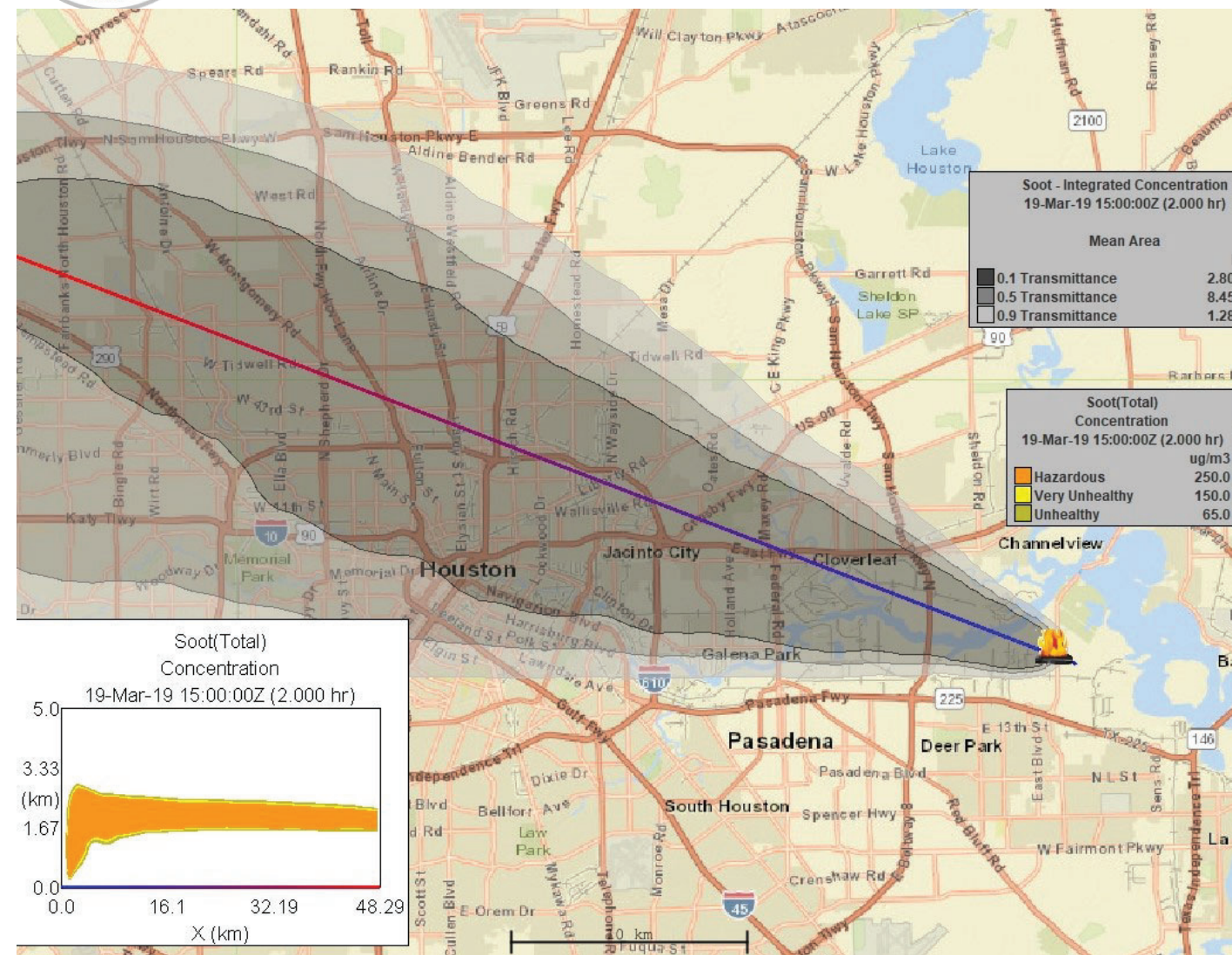
Model: HPAC 6.5

Static Population Estimates:

LandScan 2017



Soot Conc. X-Section; 1000 CDT – Initial Response



This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

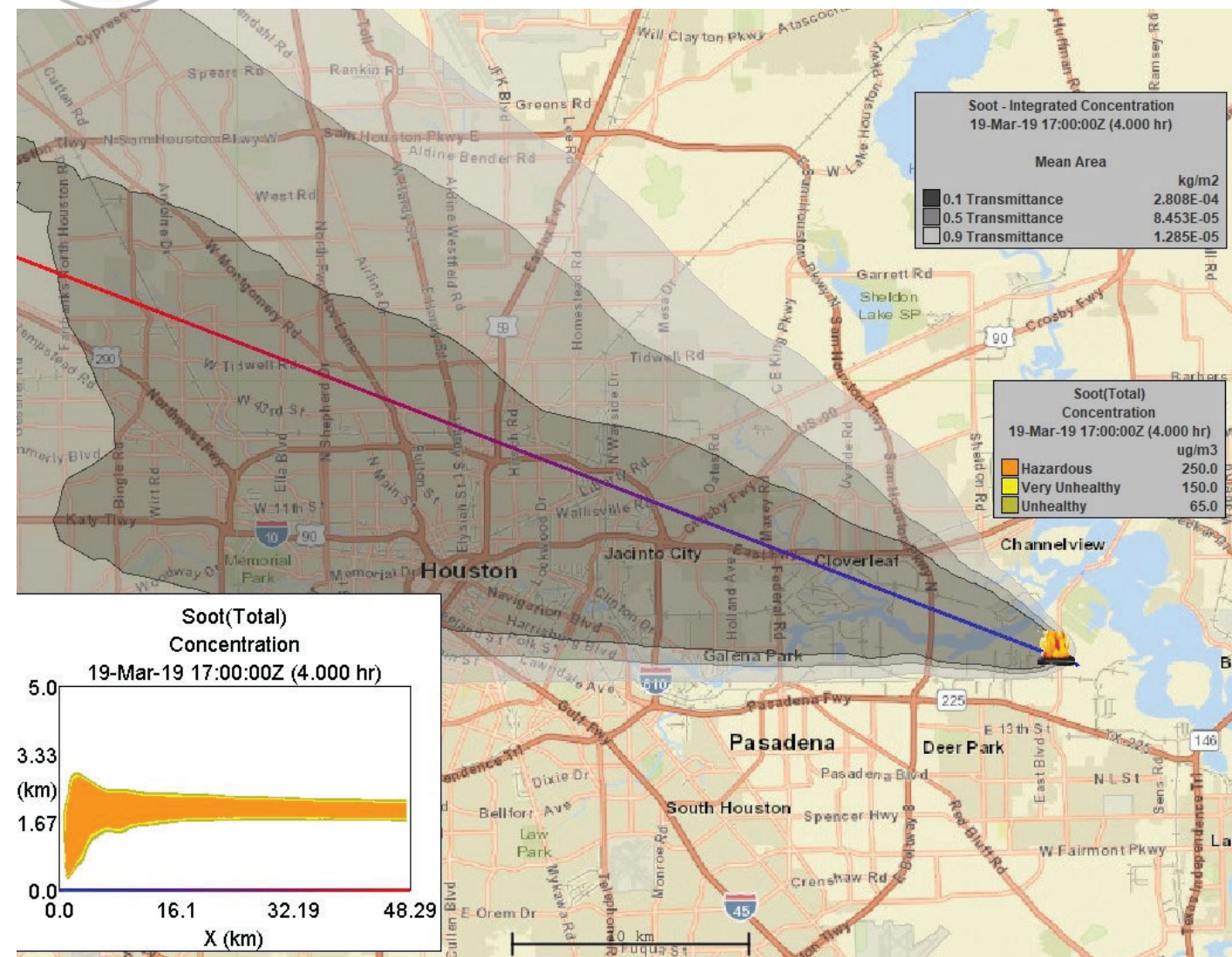
FACTS

Deer Park, TX
Location: 29.732437° N / 95.091517° W
Event Time: 0500 CDT, 19MAR2019
Type: Oil fire
Amount: 984 kg/s
Weather: 12 km NAM
Model: HPAC 6.5
Static Population Estimates:
LandScan 2017

19MAR2019 1430Z



Soot Conc. X-Section; 1200 CDT – Initial Response



This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

FACTS

Deer Park, TX
Location: 29.732437° N / 95.091517° W
Event Time: 0500 CDT, 19MAR2019
Type: Oil fire
Amount: 984 kg/s
Weather: 12 km NAM
Model: HPAC 6.5
Static Population Estimates:
LandScan 2017

19MAR2019 1430Z



Soot – Concentration

Value	Description
Hazardous	Serious risk of (1) respiratory symptoms in children/adults, (2) aggravation of heart or lung disease, and (3) premature mortality in persons with cardiopulmonary disease and the elderly.
Very Unhealthy	Significant increase of (1) respiratory symptoms in children/adults, (2) aggravation of heart or lung disease, and (3) premature mortality in persons with cardiopulmonary disease and the elderly.
Unhealthy	Increased (1) respiratory symptoms in children/adults, (2) aggravation of heart or lung disease, and (3) premature mortality in persons with cardiopulmonary disease and the elderly.

Cumulative dosage values based on exposure to 2.5um particulate matter. Concentration values and descriptions taken from Pollutant-Specific Sub-indices and Health Effects Statements and Cautionary Statements for Guidance on the Air Quality Index tables, in *Guidelines for Reporting of Daily Air Quality – Air Quality Index (AQI)*, USEPA, EPA-454/B-06-001, May 2006.